CLAIMS

1. An electromechanical component comprising:

   a polymeric body including a mechanically active part and a frame; and

   a metal layer which covers the mechanically active part at least partially so as to mechanically stabilize the same,

   wherein an area of the polymeric body, which has the metal layer provided thereon, consists of a first polymer material which is adapted to be metallized in a wet-chemical process, and another area, which does not have a metal layer provided thereon, consists of a second polymer material which is not adapted to be metallized in a wet-chemical process.

2. An electromechanical component according to claim 1, wherein the mechanically active part includes a spring connecting the frame to a mass which moves when said spring bends; and

   wherein the metal layer completely encompasses the spring with the exception of the locations where said spring is connected to the frame and the mass.

3. An electromechanical component according to claim 1, wherein a further metal layer is additionally provided on a mechanically non-active part of the polymeric body, said further metal layer being used for conducting electric signals or for screening off electromagnetic disturbances.

4. An electromechanical component according to claim 1, wherein an additional area of the polymeric body, which has provided thereon the further metal layer, also consists of the first polymer material.

5. An electromechanical component according to claim 4, wherein the polymeric body is provided with anchoring means used for interconnecting at least the mechanically active part consisting of the first polymer material and the part of the polymeric body consisting of the second polymer material such that these parts are in essentially positive engagement with one another.

6. An electromechanical component according to claim 1,

wherein the polymeric body is provided with an electrode structure comprising a first group of electrodes on the movable mass and a second group of electrodes on the fixed frame, said first and second groups being arranged in an interleaving mode of arrangement so as to act as a capacitive sensor a movement of the mass,

the further metal layer covering the first group of electrodes as well as the second group of electrodes at least partially, and said further metal layer being implemented such that the first group of electrodes is electrically insulated from the second group of electrodes by an area of the polymeric body having no metallization.

7. An electromechanical component according to claim 3, wherein the further metal layer is also provided with a connecting region including contact areas for an electronic circuit, a connecting plug and/or an SMD/soldered connection, said contact areas being electrically insulated from one another.

8. An electromechanical component according to claim 1, wherein the metal layer has a sandwich structure consisting of various metals, and/or is reinforced by electroplating.

9. An electromechanical component according to claim 1, comprising in addition:

a housing base made of polymer; and

a housing cover made of polymer,

the polymeric body being arranged between the housing cover and the housing base.

10. An electromechanical component according to claim 9, wherein the polymeric body, the housing cover and the housing base are provided with snap connection means with the aid of which the polymeric body, the housing cover and the housing base are interconnected mechanically and/or electrically.

11. An electromechanical component according to claim 9, wherein alignment means are provided on the housing cover, the housing base and the polymeric body, so as to align the polymeric body with the housing base and the housing cover.

12. An electromechanical component according to claim 9, wherein a sealing means made of polymer is provided so as to encapsulate the electromechanical component, said sealing means being especially a seal which is formed integrally with the housing base, the housing cover and/or the polymeric body by injection moulding, or a separate sealing ring.

13. An electromechanical component according to claim 9, wherein the polymeric body and the housing base are formed integrally with one another.

14. An electromechanical component according to claim 7, comprising in addition:

an electronic circuit for activating and/or evaluating the mechanically active part, the electronic circuit being connected to the contact areas in an electrically conductive manner by bonding wires, by solder means, by a conductive adhesive or by spring force-actuated contacts.

15. An electromechanical component according to claim 9, comprising in addition:

an electronic circuit for activating and/or evaluating the mechanically active part, the

electronic circuit being connected to the contact areas by at least one spring contact in an electrically conductive manner, and said spring contact being formed integrally with the housing cover or the housing base and having a metallized area extending from a connecting area of the electric circuit to a contact area on the polymeric body.

16. An electromechanical component according to claim 15, wherein the polymeric body is provided with a recess, the electronic circuit being placed in said recess.

17. An electromechanical component according to claim 1implemented as an acceleration sensor, a rotary speed sensor, a microvalve, a micropump, a pressure sensor or a force sensor.

18. An electromechanical component according to claim 1, wherein one polymer material is selected from a group comprising Pd-doped LCP and undoped polyamide 66,

wherein the second polymer material is undoped LCP, and

wherein the metal layer and the further metal layer consist of copper, nickel, gold or of a combination of these materials.

19. An electromechanical component according to claim 1, wherein the mechanically active part of he polymeric body includes a metal body inserted in the polymer material so as to increase the mass.

20. An electromechanical component according to claim 1, wherein the mechanically active part of the polymeric body is provided with recesses so as to define spacers preventing the mechanically active part from sticking to the frame in the case of movement or contact.

21. A method for producing an electromechanical component comprising the steps of:

forming a polymeric body including a mechanically active part and a frame, the step of forming the polymeric body comprising the following steps in an arbitrary sequence:

injection moulding a first portion of the polymeric body which is to be metallized, making use of a first polymer material which is adapted to be metallized in a wet-chemical process;

injection moulding a second portion of the polymeric body which is not to be metallized, making use of a second polymer material which is not adapted to be metallized in a wet-chemical process; and

forming a metal layer, which covers the mechanically active part at least partially so as to mechanically stabilize the same, by wet-chemical metallization in such a way that only the surfaces of the polymeric body consisting of the first polymer material are provided with a metal layer.

22. A method according to claim 21, wherein the step of forming the metal layer comprises vapour-phase coating making use of a shadow mask.

23. A method according to claim 21, wherein the step of forming the metal layer additionally comprises:

reinforcing the wet-chemically produced metal layer by electroplating.

24. A method according to claim 23, wherein the reinforcement by electroplating comprises the steps of:

fixing the mechanically active part of the polymeric body to the frame of the polymeric body making use of an auxiliary structure;

applying a potential to a fixed part of the polymeric body;

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depositing a metal on the movable part and the mechanically active part; and,

after the step of reinforcing the metal layer by electroplating, removing the auxiliary structure.

25. A method according to claim 21, comprising the steps of

forming the polymeric body such that it is provided with snap connections;

injection moulding in addition a polymer cover and a polymer base of the housing which are equipped with snap connections as well; and

pressing the polymeric body, the polymer cover and the housing base together until the snap connections have snapped into place.

26. A method according to claim 25, wherein the polymeric body is not provided with any snap connections and wherein the polymer cover and the housing base are interconnected by ultrasonic welding or laser welding.

27. A method according to claim 21, wherein also the housing base is formed during the step of forming the polymeric body so that the polymeric body and the housing base are formed integrally with one another.

28. A method according to claim 26, wherein the step of forming comprises the following steps:

injection embossing (injection stamping) or hot embossing (hot stamping) a polymer starting material so as to obtain an embossed element (stamped element) including the mechanically active part as well as geometrically fine structures of the frame; and

encompassing the embossed element with polymer material by means of injection

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moulding so as to obtain the polymeric body.

29. A method according to claim 21, wherein the step of forming comprises the following steps:

injection moulding an initial body of polymer material;

injection embossing or hot embossing said initial body of polymer material so as to obtain the polymeric body in such a way that the mechanically active part as well as geometrically fine structures of the frame are defined by injection embossing or hot embossing; and

encompassing the embossed element with polymer material by means of injection moulding so as to obtain the polymeric body.

30. A method according to claim 21, comprising in addition the following step:

equipping the electromechanical component with an electronic circuit by glueing making use of a conductive adhesive, by wire bonding, by soldering or by constant application of a mechanical pressure to the electronic circuit, so as to guarantee a mechanical as well as an electrical connection between the polymeric body and the electronic circuit.

31. A method according to claim 21, wherein the following steps are carried out prior to the metallization:

cleaning the polymeric body;

tempering the polymeric body; and

sensitizing the surface of the polymeric body.

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32. A method according to claim 31, wherein the step of sensitizing the surface is caused by a surface reaction comprising mild etching of the surface or causing the surface to swell or subjecting the surface to a plasma treatment and seeding it with suitable seeds so as to obtain a metallization.

33. A method according to claim 21, wherein the step of forming the polymeric body comprises the following steps:

providing a metal body;

encompassing said metal body with polymer material by injection moulding so as to form the polymeric body in such a way that the mechanically active part of the polymeric body includes the metal body.

34. A method according to claim 21, wherein an electrode structure is defined by the metal layer, the capacitance of said electrode structure being increased by reinforcing the metal layer thickness and by the resultant change in the electrode distance.

35. A method according to claim 21, wherein the step of forming the polymeric body includes the following step:

forming recesses on the mechanically active part or on the frame so as to define spacers preventing the mechanically active part from sticking to the frame in the case of movement or contact.

36. A method according to claim 21, wherein the polymeric body is provided with electrode structures having a wavelike shape so as to achieve a higher mechanical stability of thin mould walls during injection moulding.

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